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ITEM 33

REPORT ON THE PROPERTIES

OF THE

Nevada Bunker Hill Mining Company

SITUATED AT

BULLION, ELKO CO., NEVADA

CHAS. E. VAN BARNEVELD
MINING ENGINEER

SEPTEMBER 20, 1916

R E P O R T

on the properties of the

NEVADA BUNKER HILL MINING COMPANY

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The following report on the Nevada Bunker Hill Mining Co's properties is based on several examinations made by me, the first in August 1906 and the last in the months of July and September 1916.

LOCATION

The property of the company consists of a solid group of 27 patented and unpatented mining claims, embracing over 500 acres, situated in the Railroad Mining District, Elko Co., Nevada, 28 miles from Elko. The principal mine workings are situated at an altitude of 7500 to 8000 feet on the northern slope of Bunker Hill Mountain, one of the peaks of the Pinyon Range. See U. S. Geological Survey Bulletin No.408 for general report on the District.

ORGANIZATION

The Nevada Bunker Hill Mining Company was organized in 1905 under the laws of Nevada, for the purpose of acquiring the properties hereinafter described. The authorized capital is 2,000,000 shares of $1 per value, full paid and non-assessable. Of the original stock issue, 600,900 shares remain in the treasury.

HISTORY

In 1869 the Bullion Lode Claim was located on a lead-silver discovery; other locations followed and the Railroad Mining District was organized. Production was at its height in 1873 when the camp shared the fate of all silver mining districts. Very little further work was done until 1880 when the Standing Elk Mine was purchased and reopened. A small smelter was built and the property was sold to Senator Thurber who operated it until his death in 1893. The U. S. Government reports credit the camp with a production of over $3,000,000. There was no activity until 1905, when the present Company was organized to consolidate the principal old producing lead-silver mines and the newer copper finds to which no attention had been paid in the early development of the district. The Company's plan of development is to open the mines on Bunker Hill Mountain by a deep level, cross-cut tunnel whose portal, located on Redbird Mountain at an elevation of 6700 feet, is accessible at all seasons of the year. Under existing climatic and topographic conditions this is clearly the proper method to pursue.

PREVIOUS EXAMINATION

On my first visit I was very much impressed with the ore bearing possibilities of the district. At that time many of the old workings were inaccessible or in very bad condition and there was but little ore visible. My favorable impression was gained from the following observations:

(a) The general geology of the district and its similarity to other notable districts. Briefly, I found an area five miles long and one mile wide of massive limestones, ranging from crystalline to dolomitic, bounded by later intrusions of granodiorite on the east and west, and cut by several quartzite reefs and dykes of intrusive quartz porphyry. The limestone is thoroughly fractured and shattered, offering easy passage to mineral bearing solutions whose minerals were deposited in bedding planes and cross-fractures in the limestone.

(b) The numerous occurrences of iron cappings or gossans along the lime-porphyry contacts which show very promising indications of mineralization wherever opened up.

(c) The evidence of former production, such as: extensive underground workings with large stoped-out areas; occasional faces of high grade lead-silver ores (especially in the Tripoli Mine); numerous undeveloped showings of copper ore; old waste and ore-dumps from which a few car loads of sorted ore had recently been shipped, smelter slag dumps, all tending to bear out the production records of the district.

(d) The feasibility of developing the entire north slope at Bunker Hill Mountain by a deep-level, cross-cut tunnel, thereby overcoming for all the properties the serious drainage and ore transportation problems which under existing conditions prohibit the development and operation of the several small properties as independent units.

The four logical steps in the development of the immense possibilities of this property were indicated in my first report to the Nevada Bunker Hill Mining Co. as follows:

1. RE-OPENING OF THE OLD WORKINGS and the development by leasers of the ground above the Webfoot and No.5 Elk Tunnels. (fully described on pages

2. DEVELOPMENT AT DEPTH BY DEEP TUNNEL. This is always an expensive, slow and patience-trying operation which is all too frequently undertaken on insufficient evidence.

In this case, however, this charge can not be made; the surface indications in this camp are simply tremendous and all the conditions exist that go to make up the pre-requisites for strong and rich ore bodies.

The indications in the Tripoli and Elk were such as to raise some question in my mind regarding the advisability of striking at the depth to be gained by the Main Tunnel. There was the possibility to consider that the principal mineralization might be at relatively slight depth below the present workings, in which event time and money would be wasted by driving a

tunnel of sufficient length to strike 500 feet below the Tripoli workings. This point was subsequently raised by other engineers who have examined the property. This objection has been fully answered and the larger undertaking is fully justified by later developments resulting from both leasing and tunneling operations:

> One of these is the size, strength and richness of the oxidized copper and lead ore bodies being opened up in the several leases from and below the Webfoot and No.5 Elk Tunnels.
>
> The other is the fact that at 2000 feet from the portal of the Main Tunnel, and only 1000 feet from the first objective point of the tunnel, namely the Tripoli vein, stringers have been found from a few inches up to 18 inches in width, containing thoroughly oxidized lead and iron. The average of the 18-inch stringer was $15 in lead and silver. This justifies the conclusion that the tunnel is not driven too low.

3. DEVELOPMENT OF TRANSPORTATION FACILITIES. The portal of the Main Tunnel is situated 28 miles from Elko and the grades are such as to prohibit hauling into Elko. Ore was then (and is yet) hauled 12 miles by teams from the Elk dump to Raines, a station on the Eureka-Nevada, a narrow gauge railroad, which connects with both the Southern Pacific and the Western Pacific at Palisade. This Raines road is not suitable for auto-trucks; cost of hauling with teams is $5.50 per ton; the grades, the difficulty in keeping the road in repair and the consequent blockades in heavy winter weather make this an unsatisfactory means of transportation.

A good wagon road can be built on a water grade for the entire distance of 23 miles from the Main Tunnel to the Western Pacific Railroad by following down Dixie Creek to its junction with the South Fork of the Humboldt River and then following down South Fork Canyon to the railroad. This entails the construction of 7 miles of new road which the County Commissioners of Elko County have agreed to build during the winter of 1916-17. This road will give a downhill haul of 23 miles to the railroad. The cost of freighting by teams to the Western Pacific would be $7 per ton which is practically the same as present combined teaming cost to Raines, $5.50 and R.R. freight to Palisade $1.60. The great advantages of this road however, are:

1. It will be open every day in the year.

2. On account of light grades it can be very easily put in condition for and kept in repair for Tractor Haulage, which will reduce the cost to $3 per ton.

3. Could a large tonnage of lowgrade or concentrating ores be developed, sufficient to demand transportation of perhaps 200 tons a day, then a narrow guage railway could be built along this same route at a construction and equipment cost of $300,000, reducing transportation charges still further.

4. LOCAL TREATMENT. With cheaper haulage due to improved transportation facilities and in view of the satisfactory treatment charges at the Utah Smelters, the question of local treatment will hardly come up for consideration unless a large tonnage of lowgrade ore is developed, in which case the question of con-

centration and possibly the question of smelting facilities on the main line of the railroad would have to be considered.

CLAIMS and TITLES

The Nevada Bunker Hill Mining Company owns six Patented Mining Claims, enumerated as follows:

The Bullion & Webfoot, acquired when the Company was formed. The Tripoli and East Tripoli held until recently under bond. Title to these properties has just been acquired, the consideration of $35,000 being paid in Treasury Stock.

The Sky-Blue and Mounted Ledge, also just purchased, the balance of $3500 due on the bond being paid in Stock.

The Company owns the 17 Mining Claims enumerated below, which are held under Possessory Title by virtue of discovery and location. Sufficient work has been done on these claims to permit of their being patented:

1. Portal	5 Hold-up	10 Nevada	14 Storm King
2 Portal Fraction	6 Lark	11 Hoffman Fraction	15 Burke Fraction
3 Spring	7 Eagle	12 Mendota	16 West-End
4 Homestake	8 Snowbird	13 Key	17 Mahogany
	9 Owl		

In addition to the hove mentioned patented and possessory claims owned by it, the Company has under option the Standing Elk Group, consisting of three Patented Claims and a Mill-site: The Hoffman, Standing Elk, Cleveland, and the Elk Mill-Site.

The bond on the Elk Group has been renewed several times for 2-year periods. The upper zones of these properties which could be reached by shafts or tunnels on their respective surfaces are worked out. Several levels have been worked out from Elk Tunnels, No.'s. 1 to 5 inclusive, whose portals are on the Nevada Bunker Hill Co's. ground. The only possible means of development for this group is through the Nevada Bunker Hill Mining Co's. Main Tunnel, and this Company absolutely controls the situation. Therefore, if these properties are to be ultimately acquired, both the price and the terms will have to be modified so that all payments may be made in the form of royalties from ores extracted.

PRESENT DEVELOPMENT

In 1906 the Main Tunnel was in a distance of 1000 feet. In the winter of 1906-7 an attempt was made to raise money for an aggressive development campaign. Signs of the coming financial stringency were evident, however, and it proved difficult to interest people in what promised to be a long-time investment. Progress was very slow for the Comapny was never properly financed and had a long, hard struggle to attain the present gratifying stage of development. Not until this year has there been a revival of public interest in an undertaking of this kind. In the meantime the principal stockholders stood by to the best of their ability and succeeded in advancing the Main Tunnel to the 2400-foot point. Being always in debt, having very little visible ore, handicapped particularly by low metal markets and short transportation season the Company found it exceedingly difficult to get money. It was always apparent to the prospective investors that first monies from sale of new stock must be applied to pay rapidly accumulating indebtedness. The Company did a little development work in the upper workings which later were turned over to leasers with the satisfactory results indicated on the accompanying tabulation

of smelter returns which shows a total of 6463.1 tons with net returns of $134,438 to date of this report (and 8 cars not yet settled for). Much of this work was done under very discouraging conditions and on a low metal market.

The recent discoveries of lead-silver and of secondary copper-silver ore bodies of comparatively high grade, coupled with high metal prices, changed the situation; the Company has now paid off its floating indebtedness. While the 1916 copper returns show an average N. Y. quotation of 25.78 cents per pound, it must be remembered that the smelters were forced to protect themselves against loss in view of the enormous volume of ore shipped them from every quarter and the possibility of curtailed metal demand and falling price. They therefore settled for these shipments practically on the basis of 20 cents net to the shipper; the settlement basis in 1915 on a 17 cent N. Y. quotation was under 14 cents.

Following is a description of the various old mines which will be opened up by the Main Tunnel at depths varying from 500 feet to 800 feet below the deepest of the old workings. These mines are named and described in the order of their occurrence, beginning at the Tunnel portal and covering the slope of the mountain from east to west.

In order to maintain this sequence, mention should first be made of the prominent north and south Porphyry Dyke on the east end of the property, covered by the following more recent locations Portal, Portal Fraction, Hold-up, Homestake, Snowbird and adjoining claims. This belt is at contact with granodiorite on the east and lime on the west, and is cross-cut for a distance of 400 feet by the Main Tunnel which then passes through a black, crushed, lime capping containing iron pyrite, very similar in appearance to the capping overlying certain of the famous Cananea ore bodies. Iron pyrite is also easily visible in the soft decomposed prophyry, while assays report traces of copper. The Portal Shaft is being sunk just east of the portal of the Main Tunnel to prospect this contact.

OLD RED-BIRD MINE

The Eagle or Old Red-Bird Mine, situated on the Eagle Claim, was opened up in a lead-silver bearing limestone fissure averaging 3 feet in width. The vein is opened by an incline and two cross-cut tunnels which cut the vein at 80 and 180 feet respectively. The workings on this property aggregate over 1000 feet The last shipment of sorted ore from this mine gave smelter returns of 50% lead and 50 ozs. silver ($60) per ton.

The strike of this vein is S. 60° W., dipping steeply away from the main tunnel to the southeast. The direction of the main tunnel is S. 49° W. The horizontal distance between this vein and the tunnel is such that the tunnel must be extended at least 400 feet further before cutting the westerly extension of the

Red-Bird fissure. The Red-Bird orebody was found in close proximity to a strong quartzite reef which has a north and south strike. As the ore developments in the limestone are at or in proximity to contact with either quartzite or porphyry, much of the ground intervening between the old workings and the expected point of intersection with the main tunnel is likely to be barren.

THE TRIPLOI MINE

The Tripoli Mine, which consists of two patented claims, the Tripoli and East Tripoli, is situated in the center of the group on the northeast slope of Bunker Hill. The Tripoli claim was located on a main north and south fissure which cuts across and partly follows the prominent Garnetised-Lime and Porphyry contact hereinafter described. On the Tripoli property the discovery shaft disclosed high grade silver-lead ore from 4 to 5 feet wide. The shaft was continued as an incline on the vein and reached an ultimate depth of 212 feet vertically below the collar which is situated at an elevation of 7500 feet above sea level. There are 4 levels, respectively at 50, 110, 152 and 212 feet vertically below the shaft. There is a vertical winze 75 feet deep below the bottom level. The greatest depth attained is therefore 287 feet.

The workings above the 110-foot level are all in lime and show several large mined-out pipes from 12 to 15 feet in diameter. In this zone the ore was wholly silver bearing lead carbonate. On the 110 porphyry appears, and below it the fissure is either wholly in porphyry or it follows the lime-porphry contact. The vein filling in the porphyry is a very silicious porphyry carrying but little lead and increasing copper-silver values as dept increases. There are, however, on the lowest level two well defined east and west lime fissures, carrying high grade lead-silver values which have been stoped for a length of 30 feet from the 212 to above the 110.

The old workings, aggegating 1400 feet as shown by the maps (dated 1895) in the Company's office, are still accessible. The gross value of the ore mined from this property is authentically stated to be $250,000.

LOWEST TRIPOLI WORKINGS: Below the 152-foot level the vein straightened up and the shaft was continued without a change of dip into the hanging. Therefore at the 212 there is a 10-foot cross-cut to the vein, which was then drifted on 20 feet south and 180 feet north. The first 50 feet of the north drift is entirely in porphyry and shows promising indications of copper throughout this distance. The remainder of the drift is along the lime-porphyry contact; there are several large mined-out pipes which still show bunches of rich lead-silver ore. The face of the drift shows a small streak of high grade ore.

At 40 feet from the shaft (in the porphyry) this drift was widened to 12 feet, all in porphyry, and a winze sunk vertically 75 feet in depth. The roof above the winze for the entire 12 feet carries over 2% copper and practically no lead. At 25 feet in the winze a stope was started and the ground mined to the level above for a distance of 25 feet south(towards the shaft). At 55 feet in the winze a drift was run north on the vein for 10 feet and south for 15 feet. The south face assays lead 30%, copper 2.8% silver 29.3 ozs, ($45 per ton); the north face assays lead 27.7%, copper 1.3%, silver 60 ozs. ($60 per ton). The whole bottom of the

winze for over 5 feet in width assays 15.9% lead, 0.8% copper and 26 ozs. silver ($30 per ton). On the foot wall there is a 12-inch streak of high-grade galena that assays 34.6% lead and 38.7 ozs. silver ($60 per ton).

Work was stopped on this property in 1896, not on account of impoverishment of the values or lack of ore, but on account of the many difficulties arising from its location in the snow-belt; short operating season; lack of transportation and reduction facilities; the need of additional hoisting, pumping and ventilating equipment to operate to further depth. In short, owing to local conditions it is a tunnel proposition, it has no feasible tunnel site of its own, neither is it large enough to warrant an individual tunnel. The Nevada Bunker Hill Main Tunnel when extended 600 feet further will tap this fissure at a depth of 500 feet below the deepest workings of the Tripoli.

The other claims located on this main north and south Garnetized-Lime and Porphyry contact are: on the south of the Tripoli, named in order southward, Cleveland, Sky-Blue, Mounted Ledge; on the north, Mendota. The development on these claims while quite limited is decidedly encouraging.

THE MOUNTED LEDGE: Near the south end, 350 feet from the southwest corner and almost on the west side line is a vertical shaft sunk to a depth of 100 feet in an iron gossan on the contact. South of the shaft and at 200 feet lower elevation is an adit driven north along the contact, (i.e. towards the shaft) 200 feet. South of the endline, still on the contact, is another adit, 450 feet long; the face of this adit is just about 200 feet vertically below the bottom of the shaft. From these two adits several hundred tons of lead-silver-copper ore was mined in the early 80's and smelted at the old Bullion Smelters. This was low grade ore, ($20 to $25 per ton) and valued principally for its fluxing qualities on account of the iron content. Crossing over the north end line of the Mounted Ledge, the contact passes across the Cleveland claim on which there is no surface development other than the original discovery shaft. Thence it passes into the Sky-Blue.

THE SKY-BLUE: This claim has been prospected by several test pits along the contact and principally by a 300-foot tunnel intended to cross-cut the porphyry dyke through to the west contact between this porphyry and lime. The face of the tunnel is still in porphyry and must be extended farther to accomplish its purpose. Several shallow winzes have been sunk from this tunnel into the contact between porphyry and lime on the east, the deepest of these is 60 feet. During the 1916 shipping season two carloads of silicious copper ore, averaging over 15%, were shipped. The first one netted $1600, the second car is still in transit. From the Sky-Blue this contact passes into the Tripoli.

THE TRIPOLI: The principal workings on this property have been described. At 400 feet from the south end line, and 200 feet south of the Tripoli shaft, there is a large blow-out of silicious copper ore on which two small tunnels were driven. While these tunnels are caved and not accessible, the dumps have silicious copper ore scattered over them, indicating the same mineralization as on Sky-Blue. From the Tripoli this contact passes into the Mendota

THE MENDOTA: The discovery shaft of the Mendota is 800 feet from the Tripoli shaft. The contact for the entire distance between these shafts has a heavy iron capping. This capping or gossan is most pronounced at the Mendota shaft which has been sunk into it for a depth of 200 feet without penetrating through the capping into the copper orebody which, from all indications, must lie beneath. The dump surrounding this shaft shows copper values from a trace to 1.5%. It is to be noted that the Mendota shaft is sunk on the junction of an east and west Porphyry dyke with a north and south Porphyry dyke.

This contact is traced through the north end line of the Mendota, beyond Right Hand Canyon, into the Sun mine (not belonging to the Nevada Bunker Hill Co.) where ore is now being mined by leasers.

HOFFMAN AND STANDING ELK MINES

The Hoffman and Standing Elk claims were operated as one mine. Each claim was located on a strong east and west fissure in lime, showing lead-silver-copper ore bodies of varying size and richness which proved continuous from the discovery to the lowest workings, which in the Elk reached a vertical depth of 593 feet.

Both properties were opened by inclined discovery shafts, followed by a series of five cross-cut tunnels with intermediate connecting winzes and raises. The Elk discovery was sunk on a rich ore pipe which was mined out 30 feet wide with an average thickness of 10 feet, to a depth of 70 feet. At this point No.1 Elk Tunnel was driven to connect. As the mine was developed both laterally and to greater depth by subsequent tunnels, a succession of connected pipes and chambers were opened. The largest of these has a maximum diameter of 50 feet between No.4 and No.5 Elk Tunnels. Based on old assay and smelter records and on present day shipments made by leasers the ore values exceeded 25% lead and 40 ozs silver; the copper values of 2 to 5% were not paid for in those days. The old dumps were worked over by leasers several years ago and some shipments made. The foregoing statements apply generally to the developments on the Hoffman fissure which is situated 200 feet north of the Elk Fissure. Owing to topographic conditions the discovery shaft on the Hoffman is about 100 feet lower than the Elk shaft which is at elevation 7900 feet above sea level. As in the Tripoli, the principal ore bodies occur in the lime close to porphyry intrusions; these intrusions are first seen in No.3 Elk Tunnel.

In 1907 three leases were in operation on Standing Elk and Webfoot workings and 30 cars of ore averaging over $30 per ton were shipped to Salt Lake City. An analysis of the smelter returns from 14 cars (aggregating 314 tons with net returns of $8127) shows the following range of values:

Silver	16 to 27 ozs	average	21.5 ozs
Lead	9 to 16 %	average	13.25%
Zinc	2.7 to 8.9 %	average	5.17%
Copper	4.5 to 6.4 %	average	5.17%

These two properties are credited with a production of over ($1,000,000) a million dollars. Considering the extent of

the stoped-out chambers and the remaining tonnage of $15 to $20 ore, left because too low grade to handle, this claim would appear to be quite reasonable. The remaining low grade ores have a prospective value inasmuch as present developments in the whole district tend to insure better ultimate transportation and reduction facilities.

THE KEY CLAIM

This is a fractional claim lying west of the Hoffman and Standing Elk Mines. Upon this claim are situated all the tunnel portals and dumps of both the Hoffman and Elk properties. Access to these properties can therefore only be obtained through the Nevada Bunker Hill Co's workings. The first 600 feet of the lowest Elk Tunnel (No.5) is covered by the Key Claim.

The Key was located on a silicious copper deposit disclosed at several points by excavation for roads and buildings. The next appearance of this copper ore is in No.5 Elk Tunnel, which after passing through 300 feet of porphyry, cuts through 30 feet of silicious copper ore in porphyry, thence through 30 feet of barren porphyry to the lime contact.

This territory is included in the Kellogg (Key) Lease, it has been opened for a length of 100 feet, to a height of 15 feet above and 30 feet below the tunnel. (see A on Map #3). It may be characterized as a concentration of copper-silicate in a thoroughly fractured and crushed porphyry on a north and south lime-porphyry contact. The copper may extend much farther into the porphyry than the limit of the present stoping width (30 to 50 feet) which is determined by the necessity of maintaining a 10% copper minimum. In the lower section of the stope the ore makes right up to a hard well defined lime hanging wall which has a north and south strike and an easterly dip of 40°.

The ore as broken down averages about 7½% copper and is sorted up to average 11% or better. The silver values are light, running up to 4 ozs per ton. On account of its high silica content this ore is in great demand by the copper smelters. This lease commenced operations in the fall of 1915. The shipments for 1915 aggregated 164.2 tons, averaging 9.9% copper and 1.6 ozs. silver with net return of $2560 on an average N. Y. quotation of 17 cents (14 cents net settlement to shipper). Shipments were resumed on June 1, 1916, since when 372.2 tons were shipped to September 15, averaging 11.3% copper, no silver, with net returns of $14,372 on an average N. Y. copper quotation of 25.78 cents (20 cents net settlement to shipper). This lease is now shipping at the rate of 200 tons a month.

At the south end of the Key Claim, which is the highest point on the claim (marked B on Map #3) a discovery of copper-lead-silver ore on a lime-porphyry contact was made in the spring of 1913. This ore-shoot was developed to a vertical depth of 225 feet by a succession of winzes sunk on the ore and followed by a series of tunnels at 50-feet vertical intervals. The ore was followed to within 20 feet of the bottom of the lowest winze (i.e., 20 feet above No.4 tunnel level) at which point it broke away. From No.3 to No.1 tunnels this ore body was fully 25 feet wide and 50 feet long and had to be timbered with heavy square sets, (marked C. on Map #3). This is the KEY LEASE which has been operated by several

owners (among whom was the Dome Mining Company, whose name appears on some of the smelter returns). Shipments from this lease were made as follows:

1913 — 433 tons, copper 4.2% (15.2 N. Y. quotation) lead 19.3% (4.25 N. Y. quotation), silver 35 ozs. (58¢ N. Y. quotation) net returns $12,646.

1914 — 2116 tons copper 3.6% (11.5¢ N. Y. quotation), lead 15% (3.85¢ N. Y. quotation), silver 22.5 ozs. (52¢ N. Y. quotation), net returns $26,756.

1915 — 361.8 tons copper 3.6% (17¢ N. Y. quotation), lead 18% (4.69¢ N. Y. quotation), silver 18 ozs. (48¢ N. Y. quotation), net returns $4560.

1916 — Durnig 1916 some low grade material was mined following along the break; the values were very low and could only be shipped on the abnormally high metal n market prevailing. 137.4 tons were shipped, 2.7% copper, 16.8% lead, 9.7 ozs silver, net returns $2499. The leasers abandoned this ground for a better showing elsewhere on the property. This orebody has not yet been picked up by the lowest workings on No.4 tunnel of this lease and it may be that it will not be picked up on the dip until undercut by a drift from the Webfoot. The indications are that this fissure is identical with the fissure being developed in the Kellogg lease on the Storm King property to be described.

STORM KING, BULLION & WEBFOOT MINES

The Storm King Claim embraces the portal of the Webfoot tunnel which was driven under a heavy iron gossan on which this claim was located. This tunnel passes through 300 feet of highly altered porphyry, then through 15 feet of copper-silicate in the porphyry, then through 100 feet of very slightly mineralized porphyry into lime. A drift was run west 45 feet on this copper. At the face this drift was widened to 12 feet, all in ore. The drift showed many large boulders crushed and replaced by copper silicate. At the entrance to this drift a 30-foot winze has been sunk (marked D on Map #3) from the bottom of which some 100 feet of drifting was done. About 8 carloads of copper ore was shipped from this, as follows: in 1915, 133.1 tons netting $1690; in 1916, 64 tons, netting $2241.

Proceeding along the Webfoot Tunnel 100 feet from this orebody through slightly mineralized porphyry a lime contact is reached. The tunnel makes a slight turn eastward and follows a north and south lime fissure for a distance of 360 feet, where another mineralized east and west porphyry dyke is cut. After continuing in the same general direction through the porphyry on several stringers and bunches of ore in porphyry, a badly shattered north and south lime-porphyry contact is entered which widens out to form a cave 60 feet long, 20 to 30 feet wide, (marked E on Map #3), containing high grade lead-silver and copper-silver ores. The ore in this cave has been mined by square setting to a height of 60 feet above the tunnel level and to a depth of 50 feet below.

This orebody is in the center of the Bullion Claim and is covered by the Grant Lease.

GRANT LEASE: The average width of the Grant orebody is over 20 feet. There is ore showing both in the top of the stope and in the bottom of a winze sunk 50 feet below the tunnel level. From this winze a cross-cut is being run east, in the ore, to the hanging, preparatory to square-set stoping to the tunnel level above. This ground is badly shattered and needs very careful timbering. The heavy fracturing on the line hanging is very favorable to ore deposition. This stope was opened in May 1916 since when there was shipped 1273.4 tons averaging 17% lead, 3% copper, 17ozs silver and 12% iron, with net smelter returns of $34,054. The lead is principally carbonate with some galena, the copper is carbonate and silicate with small occurrences of chalcopyrite. This lease will probably ship from 3 to 5 cars monthly during the shipping season.

BURKE FRACTION and WEST-END CLAIM

These claims are located on a large east and west porphyry dyke extending through the north end of the Bullion across the Storm King, Burke Fraction and West-End claims into the Sweepstakes South Mine, adjoining the Nevada-Bunker-Hill properties on the west.

This dyke is from 100 to 200 feet wide and ore is found on both contacts. The principal workings are shallow prospect shafts, 50 to 60 feet deep, and one tunnel with portal on the West-End Claim, driven 300 feet easterly along the contact. From this tunnel over 230 tons of high grade copper ore was shipped. In 1915 a shipment of 43 tons was made from the Burke of 18.6% copper ore which netted $1991 (on a 17¢ N. Y. quotation). In 1916 Burke Shipments aggregated 115.9 tons of 19.3% copper ore, netting $8083 (on a 25¢ average N. Y. quotation), while West-End shipments aggregated 79.2 tons of 21% copper ore, netting $5903. There are no other developments on these properties.

ADJOINING PROPERTIES

In the foregoing descriptions all the properties owned and controlled by the Nevada Bunker Hill Mining Company have been covered. Brief mention will now be made of the surrounding properties in which this Company has no interest.

THE SWEEPSTAKES MINES: Three claims adjoining the West-End Claim of the Nevada Bunker Hill Mining Co. on the West side line, opened by two shafts, each 100 feet deep, and by a tunnel 1500 feet long headed for a point 200 feet vertically below the bottom of the south shaft. This property is being operated under lease and bond; the leasers are shipping a good grade of copper-lead-silver ore.

THE SYLVANIA MINE: Consisting of one full claim and two fractions, adjoining the Nevada Bunker Hill Mining Co's. Mendota Claim on the east and the Storm King and Burke Fraction on their north end lines. This property is being worked by 2 sets of leasers who have during the last 12 months shipped 15 cars of copper ore averaging about 12% copper.

THE PALISADE COPPER COMPANY: Owning two patented claims (containing only 10 acres) abutting the north end line of the West-End Claim. This Company is employing 8 men on development work and has shipped this season 10 cars of 25% copper ore.

THE BRODINE MINING COMPANY: Owning some claims adjoining both the Nevada Bunker Hill Mining Co's Mahogany Claims and the Sweepstakes Mine on the south. This Company is developing, employing ten men, and during this season has shipped 11 cars of copper silver ore carrying considerable sulphide ore containing some gold values. One car shipped this season netted over $5000.

DEVELOPMENT THROUGH MAIN TUNNEL

The appearance of the rock at the breast of the Main Tunnel is such that it would not be surprising if the next round or two were to break into ore. To cut the Tripoli fissure the tunnel must be extended 600 feet on its course to the 3000-foot station. After the fissure has been cut, a drift must be run on the fissure 400 feet south to undercut the orebodies of the Tripoli Mine. To explore the ground below the heavy iron capping surrounding the Mendota shaft will require a 300-foot drift north along the same fissure . The minimum footage required, then, to prospect this territory at a depth of 500 feet below the deepest workings, will be 1300 feet.

Continuing beyond the Tripoli Fissure on its course, the Tunnel passes through the northern end of the Hoffman and Standing Elk Claims, cutting the north and south fissure on these claims 500 feet north of and 800 feet below the known ore bodies on these fissures. By drifting 500 feet southward on the Hoffman and Elk fissuresthe known orebodies will be undercut. There are possibilities of encountering other orebodies in this territory as indicated by the numerous test pits sunk in the iron gossan on the north ends of these claims, from which some lead-silver ores were mined at shallow depths in the early days of the camp.

At the 3600-foot stations on the course of the Tunnel orebody A, now being developed on the Kellogg (Key) lease, will be undercut 800 feet below No.5 Elk Tunnel and 700 feet below the established leasing zone.

At the 4000-foot station on the course of the Tunnel the large north and south fissure on which the Webfoot Tunnel is driven will be reached. A 700-foot drift south along the fissure would strike 700 feet vertically below the Grant Lease and would develop the three caves, the tops of which were opened in the Webfoot Tunnel.

From the 4000 to the 5000-foot station the Tunnel will pass under a heavily mineralized surface showing to the west end of the property where the Burke and West-End leases are now being worked.

BUILDINGS AND EQUIPMENT

There are several well-built houses in the vicinity of the Main Tunnel portal, also a blacksmith shop and a power house. The equipment at the tunnel consists of one Ingersoll-Rand Class M.E. 1 - 8 x 8 air compressor; one Foos 13 H. P. gasoline engine; one No. 4 Champion exhaust fan; one 7½ K. W. Generator; the usual blacksmith equipment. In order to be properly equipped for the extension of the tunnel, it is recommended that a 25 H.P. gasoline engine be purchased to run the compressor; the engine now in place to be connected to the fan and generator. Thirty-five hundred dollars will buy all the equipment necessary to carry on the work, including gasoline engine, two Sullivan D.P. 33 Rotating Drills with mounting, and the necessary hollow steel, also all mine cars and track, water-, air-, and ventilating-pipe, etc.

The camp and the power house are amply supplied with water piped from springs situated above the camp buildings. On the Standing Elk dump are bunk houses and a blacksmith shop.

CONCLUSION

The Nevada Bunker Hill Mining Company owns and controls a large and well located block of ground, covering a strongly mineralized belt. The upper zones of the old workings yielded richly in lead and silver.

Recent explorations in these upper workings have developed high-grade copper ores in sufficient quantity and so distributed as to warrant the expectation of developing a large copper mine. The returns from shipments made during 1912 - 1916 are tabulated on page 14; photostat copies of the actual smelter returns are attached to this report.

The geological conditions are most favorable. This opinion is corroborated by the reports of H.S. Huston, Mining Engineer, of San Francisco, and of Professor Charles H. White of the Department of Geology and Mining of Harvard University. Photostat copies of these reports are also attached hereto.

In conclusion: The judicious expenditure of $25,000 as hereinbefore outlined should fully prove the property. I recommend the stock of the Company as a sound and legitimate mining risk provided the Company continues its policy of rigid economy, and provided the proceeds from the sale of treasury stock are expended in driving the Main Tunnel and in the deep development of the ore bodies which from all indications exist in Tripoli and Mendota territory.

Chas. Kevan Barrenell

Mining Engineer.

Dated: San Francisco, California,
September 20th, 1916.

NEVADA BUNKER HILL MINING COMPANY'S SHIPMENTS 1912 TO SEPT. 15, 1916

YEAR	NAME OF LEASE *	DRY TONS	SILVER OUNCES PER TON		LEAD PER CENT		COPPER PER CENT		NET RETURNS *	AVERAGE PRICE FOR THE YEAR IN DECIMALS OF A DOLLAR PER UNIT		
			Range	Average	Range	Average	Range	Average		SILVER Per Ounce	LEAD Per Pound	COPPER Per Pound
1912	Elk	114	22 to 40	30	17 to 26	23	2 to 4	3	$ 3,462.60	$ 0.63	$ 0.045	$ 0.17
1913	Elk	120	10 " 40	30	15 " 29	20	3 " 6	3	1,826.09	0.58	0.0425	0.152
1913	Key	433	16 " 44	35	14 " 30	19.3	1.9 " 6.1	4.2	12,646.61	"	"	"
1914	Key	2116	8.4 " 34.6	22.5	9.8 " 18.6	15	1.9 " 6	3.6	26,756.07	0.52	0.0385	0.115
1914	Elk	356.7	15 " 42	30	10 " 29.7	19	2.2 " 6.5	3.2	4,294.02	"	"	"
1915	Key	361.8	4 " 45	18	7.9 " 17.8	12	2.5 " 7.6	3.6	4,560.04	0.48	0.0469	0.17
1915	Elk	373.8	7 "145	31	5 " 67	16	1 " 10	4.0	4,692.11	"	"	"
1915	Kellogg	164.2	1 " 4	1.6	— —	—	6.1 " 13	9.9	2,560.02	"	"	"
1915	Burke	43.1	— —	—	— —	—	18.3 "18.9	18.6	1,991.24	"	"	"
1915	Tripoli	61.3	12 " 30	19	18 " 39	29.2	1 " 8	3.3	871.49	"	"	"
1915	Grant	17.0	— 38.1	38.1	— 8.2	8.2	— 4	4.0	328.38	"	"	"
1916	Key	137.4	.7 " 12	9.7	15 " 19	16.8	2 " 4.5	2.7	2,499.84	0.65	0.0609	0.2578
1916	Elk	297.4	11 " 19	13.7	9 " 12	11.0	1.5 " 4	2.3	3,935.90	"	"	"
1916	Kellogg	372.2	— —	—	— —	—	9 " 13	11.3	14,372.34	"	"	"
1916	Burke	115.9	— —	—	— —	—	17.5 "21.6	19.3	8,083.47	"	"	"
1916	Sky Blue	26.7	— —	—	— —	—	— 15.4	15.4	1,600.38	"	"	"
1916	West End	79.2	— —	—	— —	—	— 21.0	21.	5,903.55	"	"	"
1916	Grant	1275.4	11 " 33	17	11 " 24	17	1 5.4	3.	34,054.15	"	"	"
- - - -	TOTAL - - - -	6463.1	TONS -						$134,438.30	- - - - - - - - - - - - - - - -		

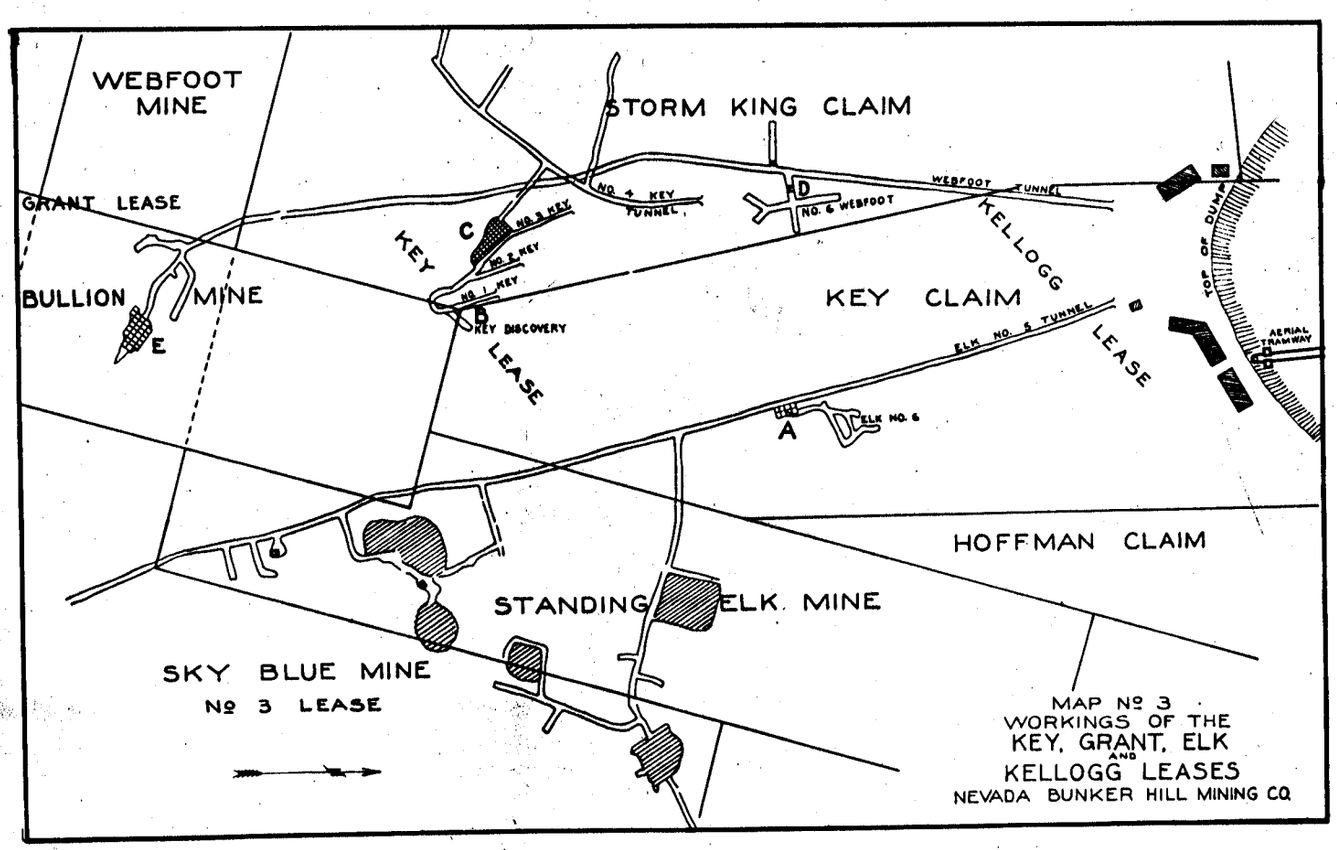
EIGHT CARS ORE AT SMELTERS NOT YET SETTLED FOR THIS 15TH DAY OF SEPTEMBER, 1916.

* NET RETURNS ARE DEFINED AS FOLLOWS: PRICE RECEIVED BY SHIPPER AFTER DEDUCTING ALL SAMPLING, ASSAYING, RAILWAY FREIGHT AND SMELTER TREATMENT CHARGES.

ESTIMATED GRANT LEASE WILL SHIP 5 50-TON CARS MONTHLY SO LONG AS WEATHER PERMITS,
" KELLOG " " " 4 " " " " " " " " "
" BURKE " " " 2 " " " " " " " " "
" WEST END " " " 2 " " " " " " " " "
" ALL OTHER " " 1 " " " " " " " " "

This tabulation was compiled from the Books of the Company and from the Smelter Returns, photostat copies of which accompany this report

Charles S. VanBarneveld

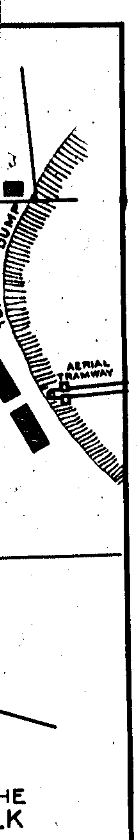


MAP Nº 3
WORKINGS OF THE
KEY, GRANT, ELK
AND
KELLOGG LEASES
NEVADA BUNKER HILL MINING CO.

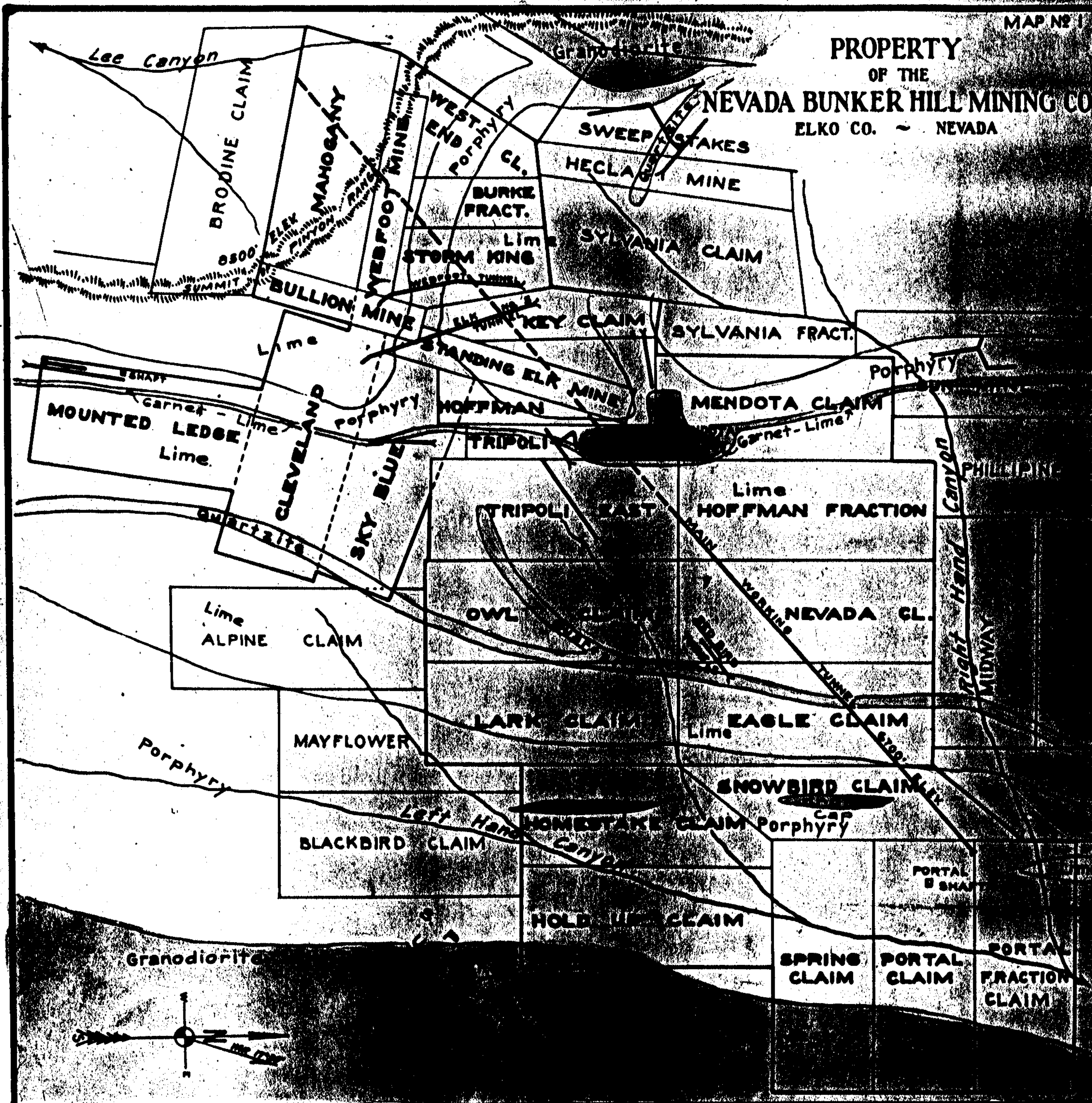
YEAR PER UNIT
COPPER Per Pound
$ 0.17
0.152
"
0.115
"
0.17
"
"
"
"
0.2575
"
"
"
"
"
"

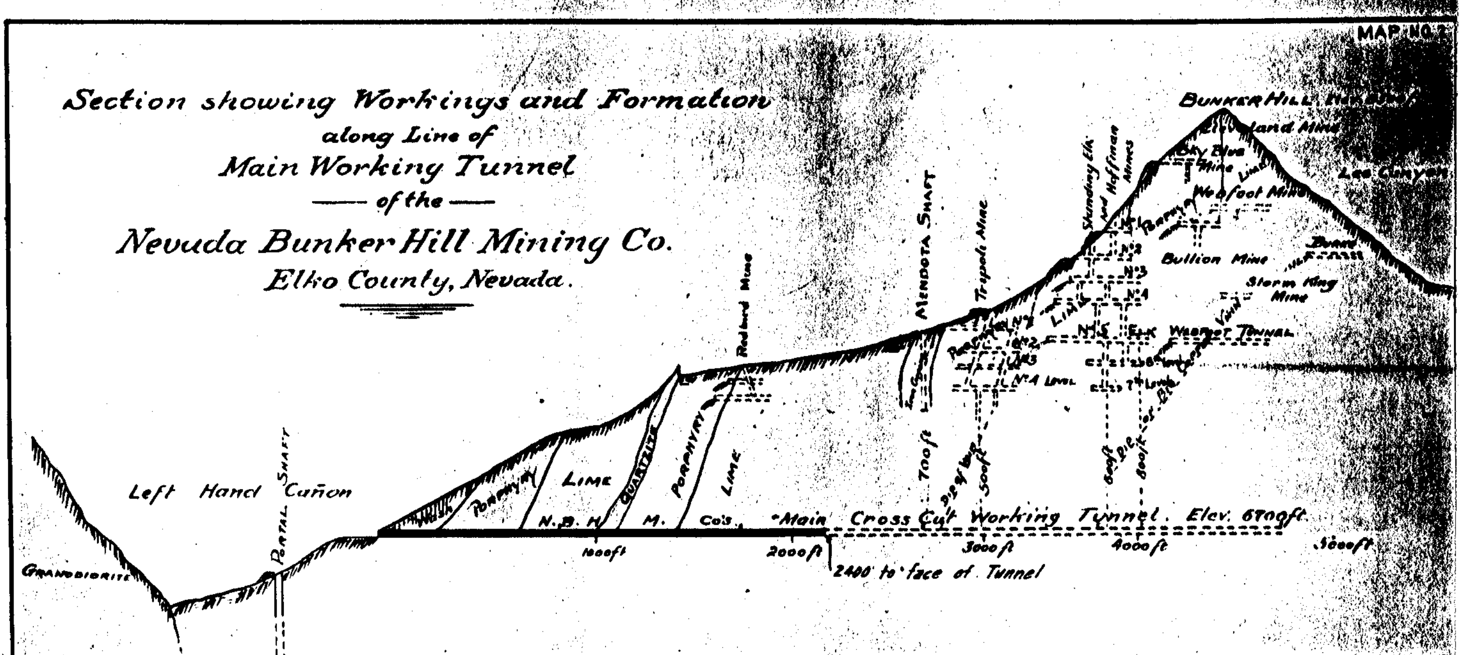
SMELTER CHARGES.

Compiled ... Company Returns ... which ... report ... herewith



...HE
...LK
...ES
...MINING CO.





PRELIMINARY REPORT

on

NEVADA BUNKER HILL MINING PROPERTY

By H. L. Huston, Mining Engineer,
634 Mills Building, San Francisco, Calif.

- - -

ORGANIZATION

The Nevada Bunker Hill Mining Company was organized in 1905 for the purpose of acquiring and operating the mining property which is here described.

This Company was incorporated under the laws of the State of Nevada, with an authorized capitalization of two million shares, par value One Dollar per share, fully paid and non-assessable. 800,000 shares of the original stock issue, are still in the Treasury unsold.

LOCATION

The mining property owned by the Nevada Bunker Hill Company is situated in the Railroad Mining District, Elko County, Nevada, twenty-eight miles from Elko. The principal mine workings of the group are situated high up on the Northern slope of Bunker Hill Mountain, at an elevation approximately 7500 ft. above sea level.

EXTENT

The present holdings of this Corporation embrace Twenty-seven patented and unpatented mining claims, in the Railroad Mining District; these claims all adjoin and form a

solid block of ground, approximately 308 acres in extent, in the heart of the district mentioned. Nineteen of the twenty-seven claims now belong to the Company by right of location and purchase, while the remaining eight claims are held under an option agreement to purchase for the sum of One Hundred Forty Thousand Dollars ($140,000.00).

The claims which are owned outright by the Company are:

Spring	Snow Bird	Key
West End	Owl	Storm King
Mendota	Lark	Webfoot
Hold Up	Eagle	Bullion
Homestake	Nevada	Burke Fraction
Portal	Hoffman Fraction	Mahogany
Portal Fraction		

On the eight patented claims now under option to the Company, the purchase price agreed upon is as follows:

For the Sky Blue and Mounted Ledge claims, total purchase price $35,000.

For the	Tripoli	Hoffman
	Tripoli East	Standing Elk
	Cleveland	Elk Mill Site

total purchase price $105,000.

GEOLOGY OF DISTRICT

The general geology of the Railroad Mining District is very fully described in Bul. 408 Dept. U. S. Geological Survey by S. F. Emmons.

A massive limestone ranging from a crystalline variety to dolomites, is the principal rock series found in the Bunker Hill property,

Granodiorite appears a few hundred feet west of Bunker Hill mines where it is in contact with limestone. This contact is traceable for some distance through the country in a North-South direction, and is characterized by a zone of typically contact metamorphic rocks, which prove conclusively that the granodiorite occurred at a later period intruding the limestone.

This intrusion apparently was accompanied by a general uplift of the limestone which fractured and shattered the latter to a marked degree. This fracturing was further augmented, no doubt, by the dykes of intrusive quartz porphyry which are now found permeating the limestone for some distance away from the granodiorite contact.

These fractures in the limestone offered comparatively free channels through which mineral bearing solutions circulated, until conditions were encountered which favored precipitation of the metallic loads which these solutions carried.

Cross fractures and bedding planes in the limestone appear to have offered the most favorable conditions for chemical interchange and the subsequent precipitation of metals; consequently, the most extensive ore bodies are usually found in this formation, where a juncture of these fissures occurred. These deposits are irregular in shape and size due to incomplete replacement of certain constituents of the enclosing rock. The absence of minerals which are formed at high temperature, along the contacts where intrusive porphyry penetrates the limestone, indicates that these intrusions took place at intermediate depth.

under moderate conditions of temperature and pressure.

ORE DEPOSITS.

Copper ores of commercial grade in the form of carbonates and oxides, are now found in places along the contact of these porphyries, while the deposits which contain silver and lead as predominating minerals, are invariably found well out in the limestone some distance from the porphyry intrusives.

DEVELOPMENT.

Development work in the Bunker Hill property has been conducted principally by leasers working through tunnels; these were driven in to encounter the ore, at different levels, from points high up on the northern slope of Bunker Hill Mountain. These tunnels, together with lateral prospecting drifts, stopes and connections, aggregate thousands of feet of mining work, which mus t have yielded a large tonnge of shipping ore since these workings are accredited with a total gross production of $3,000,000. The Company has always encouraged leasers to work in the upper levels in this property as these leases yield the company a good royalty, on ore shipped, and at the same time the work done helps materially to develop the property. The Company recognized however that to develop the mine properly and conduct mining operations economically and profitably thereafter, it would be necessary to drive a deep level tunnel which would intersect the ore bodies at great depth. Accordingly the Davis tunnel was started at a point well down in the

Canyon Northeast of the mines. The level of this tunnel is 500 ft. vertically below the deepest workings in any of the mines at the present time. This tunnel is now in a distance of 2400 ft. and it is estimated that by driving an additional 600 ft., it will cut the Tripoli fissure, which has been so extensively explored in the Tripoli Mine.

LEASES

The very low metal market which has obtained for some years past did not stimulate the active production of ores by leasers; nevertheless, records of shipments made during 1912-13-14-15 show that during this period there was produced 4570 tons of ore having a total gross value of $114,102.60.

At the present time there are ten leasers actively engaged in mining ore at different points in the Company's property. Four of these leases are producing silver-lead ores while the remaining six are working the copper-silver ores which are found along the porphyry contacts and out in the altered porphyry as silicious copper ores.

During the past winter, which was unusually severe, very little work was done in the different leases, nevertheless when roads were in condition for hauling this spring, the different leasers had on the dump ready for shipment over 600 tons of shipping ore, the gross value of which was estimated at $32,000.00. Several of the leases were let during the present month. These leases are all in the hands of experienced miners and two at least, have financial backing sufficient to enable them to conduct operations on a large scale. Accordingly, the

Company anticipates that during the present year, leasers will be making unusually large shipments of high grade ore to the smelter. Of the leases now in operation, which promise to produce a very large tonnage of shipping ore this year, may be mentioned:

The Grant Lease, operating on Storm King and Bullion ground, which recently opened up a body of excellent grade silver-lead ore, 27 ft. in width, from which the manager of this lease expects to ship at least 1,000 tons of ore per month.

Assays of this ore gave (Silver 10.7 oz. per ton.
(Lead 15.7%
(Copper 2.9%

The Lakenan Copper lease embraces several areas, in which are found the bedded deposit of high grade silicious copper ore and as this lease has ore already developed and is to be very actively worked, there is no doubt but that it will ship a very large tonnage of ore this year. The shipping ore from this lease usually assays from 10% to 14% copper and .03 to .09 oz. silver.

WORKING CHARGES

The Company allow leasers $2.00 per ton as cost of mining the ore.

Hauling by team from Webfoot and Elk 5 Tunnel to Raines Siding on the Eureka and Palisade R.R. costs $5.50 per ton.

Railway charges from Raines Siding to Palisade $1.60 per ton. From Palisade to Garfield Smelter, in the Salt Lake Valley, railway charges are $4.20 per ton and up, depending on the

grade of ore shipped.

The total treatment charges for smelting the silver-lead ores usually runs from $3.00 to $3.75 per ton dry weight.

For the copper ores, treatment charges run from $4.00 to $4.25 per ton.

SMELTER PAYMENTS

The Grant Lease has a written contract with the U.S. Smelting Co. of Salt Lake, under which all of the leasers on Bunker Hill property are now shipping. This contract is to continue in force until July, 1917. The smelter schedule set forth in this agreement appears to be extremely fair, and shippers appear to be well satisfaied with the payments made. Settlements for silver-lead ores are based on ore carrying 20% lead and over 1% copper. A treatment charge of $1.25 per ton is made on this grade of ore with 10¢ per unit variation.

CONCLUSION

A study of the ore deposits in Nevada Bunker Hill property convinces me that we have here a type similar to the lead-silver deposits which have been so extensively worked at Leadville, Colorado, Tintic, Utah, and at Eureka, Nevada.

Ore bodies similar to those found in the upper workings of this mine will undoubtedly be found to extend to very considerable depth in the limestone below. I would therefore recommend that sufficient capital be provided to enable this company to extend their deep level tunnel to the intersection of the principal ore bearing fissures which have been encountered

above with every assurance that this work will early open up large and valuable deposits of shipping ore.

The deep level tunnel is now in a distance 2400 ft. By driving this tunnel an additional distance of 600 ft. it should intersect the Tripoli fissure. Lateral drifts would then be required to explore the fissure on this level.

At a distance, 4,000 ft. from portal, and on its present course, this tunnel should intersect the Standing Elk fissure, which could then be explored at this depth.

Estimates have been furnished showing that the driving of this deep tunnel can be accomplished at a cost not over $10.00 per foot, for any given distance which the company are willing to contract. Two thousand feet of main tunnel and lateral drifts should be the maximum amount of mining work required toreach the two main fissures mentioned and demonstrate ore bodies in the same. This work should be accomplished at a cost not to exceed $25,000.

H. D. Huston,
Mining Engineer.

Dated: San Francisco, Calif., May 18th, 1916.

CLASS OF SERVICE	SYMBOL
Day Message	
Day Letter	Blue
Night Message	Nite
Night Letter	N L

If none of these three symbols appears after the check (number of words) this is a day message. Otherwise its character is indicated by the symbol appearing after the check.

WESTERN UNION TELEGRAM

NEWCOMB CARLTON, PRESIDENT

Form 1206

CLASS OF SERVICE	SYMBOL
Day Message	
Day Letter	Blue
Night Message	Nite
Night Letter	N L

If none of these three symbols appears after the check (number of words) this is a day message. Otherwise its character is indicated by the symbol appearing after the check.

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SP ELKO NEB 27 VIA DA NEWYORK MAY 27 1916

CHARLES A MAU

WALDORF HOTEL NEWYORK

TWO DAYS CAREFUL WORK NEVADA BUNKER HILL GREATLY ENCOURAGED FUTURE PROSPECTS | LOWEST WORKINGS SHOW GOOD BODIES HIGH GRADE CARBONATE ORE | EXRECTED ZONE GREATEST ENRICHMENT, WHERE BEST ORE USUALLY FOUND, MUCH DEEPER | STRONGLY ADVISE RUNNING TUNNEL | EXPECT LARGEST BODIES ORE AFTER ABOUT TWO THOUSAND FEET MORE | COST ABOUT TWENTY FIVE THOUSAND

CHAS H WHITE

625AM

Chas. A. Mau, Esq.,
New York City

Sacramento, Cal.
May 28, 1916

Dear Mr. Mau:-

To confirm my telegram of last night from Elko, Nevada, I hasten to write this personal letter in preference to waiting until I could prepare a formal report.

The entire two days were spent in going through the workings of the Nevada Bunker Hill and a few small workings on adjoining properties, and in an inspection of the surface geology and topography with the purpose of learning not only the position and extent of ore bodies now being worked and of those already exhausted, but to form an opinion as to the genesis of the ore and as much as possible of the circumstances which have brought about its local enrichment. The eveings were spent in gathering information in regard to the organization and holdings of the company and in the examination of smelter returns. Of the latter I had access only to those which had been received since January 1, 1915; those of previous years having been sent away from Elko. In all these matters the information I received was in practical agreement with Mr. Huston's report, and I will therefore omit them here.

The ore deposits of the Nevada Bunker Hill Company and those of the adjoining properties are undoubtedly associated with the porphyry intrusives which have penetrated the limestone country rock. The ore, no doubt originally deposited chiefly as sulphids, has suffered decomposition by the action of descending waters, and, as far down as the deposits have been worked, shows very little altered sulphide. Small masses of lead sulphide are found in the centers of blocks which have been in a measure protected from the action of oxidizing waters. The lead is chiefly in the form of carbonate and the copper as silicate and carbonate. You see, therefore, these deposits appear to form a typical example of secondary enrichment and I can see no reason why it should not continue to follow the rule of such deposits as work proceeds in depth. I was able to examine it for a vertical depth of more than 500 feet from the surface and at many points underground in an area about three quarters by one-half mile in extent.

The regularity with which these deposits conform to others similarly situated, taken in conjunction with the enclosing rocks, the topography, and the probable positions of the ground water level, give me great confidence that the most valuable deposits of this district are yet to be discovered on lower levels than have yet been reached.

I consider that the tunnel which is now in about 2400 feet is well placed to open up and give an outlet to the most valuable deposits on the property. At a distance of about 800 feet from the present face, it should be under the Tripoli vein, but in my estimation the great deposits will not be found until it is driven 1000 to 1200 feet still farther. This tunnel can be driven 8 to 10 feet per day at a cost of about $12.00 per foot at the present high cost of labor and supplies.

Three men connected with the Nevada Consolidated recently bought out leases in one adit for $6000.00 and left the work in charge of a very efficient local superintendent. Another group has a lease in another adit nearly on the same level and are now mining a block of ore than far exceeds in value everything that is visible in the lease of the Nevada Consolidated group. All the leases are limited to 100 feet in depth. There are many who are leasing but I merely cite these cases as indications of what practical mining men are doing with very small blocks of ground.

I need not tell you that there is some risk in all mining at this stage, but I regard this mine as an unusually good risk and one that I believe will not be left idle long.

Yours very truly,

Charles D. White